

UNIVERSITI TEKNOLOGI MARA

**CERAMIC MATERIALS AS A
REPLACEMENT ARTIFICIAL REEF
DESIGN USING LOCAL
STONEWARE CLAY**

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Thesis submitted in fulfillment
of the requirements for the degree of
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I certify that a Panel of Examiners has met on 23 October 2015 to conduct the final examination of Abu Nain Bin Umar on his Master of Art & Design thesis entitled “Ceramic Materials As A Replacement Artificial Reef Design Using Local Stoneware Clay” in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiners recommends that the student be awarded the relevant degree. The panel of Examiners was follows:

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I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and the result of my own work, unless indicated or acknowledged as referenced work. This thesis has not been submitted to any academic institution or non-academic institution for any degree or qualification.

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ABSTRACT

Artificial reef in Malaysia currently are growing. Exploring and study on artificial reef is carried out by several agencies such as Southeast Asian Fisheries Development Center (SEAFDEC) and SIRIM Bhd Malaysia. SEAFDEC especially thorough research contributed to marine life. According to Ahmad Ali SEAFDEC has been using reinforce concrete materials since 1986 until today, in Pulau Payar Marine Park Kedah. They discover that the concrete artificial reef is difficult to produce, suitable for small fishes. It is easier to build an artificial reef using stoneware ceramic than concrete cement. The ceramic reef can stand drastic thermal change that happen under sea-bed, which could break the cement artificial reef. However, ceramic stoneware clay is an alternative materials for an artificial reef alternative because it is cheaper and it is has better quality. This research is to exploit the local stoneware clay from the area of Sabak Bernam because the area is closer to the sea to setup artificial reefs. Other than that, it facilitates the process of artificial reef production. Most of the artificial reef design in Malaysia does not have an artistic impact. The sculpture artificial reef could attract art lovers to enjoy the beauty of the underwater art gallery. The objective in this research is to introduce new design for artificial reef in Malaysia. The new developed design of artificial reef will remain as a shelter and source of food for marine life. The study will be a new design development for the future artificial reef in Malaysia.

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